



GUARANTEEING YOU THE GREENEST REFRIGERATION AVAILABLE



Undercounter Cabinets, Space Savers & Prep Tables with BIT25 Controller & LCD5S Display



Service Manual



ISO 14001



ISO 9001



By Appointment to
Her Majesty Queen Elizabeth II
Suppliers of Commercial Refrigeration
Foster Refrigerator, Kings Lynn



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Service Manual Information

The products and all information in this manual are subject to change without prior notice. We assume by the information given that the person(s) working on these refrigeration units are fully trained and skilled in all aspects of their workings. Also that they will use the appropriate safety equipment and take or meet precautions where required.

The service manual does not cover information on every variation of this unit; neither does it cover the installation or every possible operating or maintenance instruction for the units.

Health & Safety Warnings and Information

	Make sure the power supply is turned off before making any electrical repairs.
	To minimise shock and fire hazards, please do not plug or unplug the unit with wet hands.
	During maintenance and cleaning, please unplug the unit where required.
	Care must be taken when handling or working on the unit as sharp edges may cause personal injury, we recommend the wearing of suitable PPE.
	Ensure the correct moving and lifting procedures are used when relocating a unit.
	Do NOT use abrasive cleaning products, only those that are recommended. Never scour any parts of the refrigerator. Scouring pads or chemicals may cause damage by scratching or dulling polished surface finishes.
	Failure to keep the condenser clean may cause premature failure of the motor/compressor which will NOT be covered under warranty policy.
	Do NOT touch the cold surfaces in the freezer compartment. Particularly when hands are damp or wet, skin may adhere to these extremely cold surfaces and cause frostbite.
	Please ensure the appropriate use of safety aids or Personnel Protective Equipment (PPE) are used for you own safety.

Environmental Management Policy for Service Manuals and Duets.

Product Support and Installation Contractors

Foster Refrigerator recognises that its activities, products and services can have an adverse impact upon the environment.

The organisation is committed to implementing systems and controls to manage, reduce and eliminate its adverse environmental impacts wherever possible, and has formulated an Environmental Policy outlining our core aims. A copy of the Environmental Policy is available to all contractors and suppliers upon request.

The organisation is committed to working with suppliers and contractors where their activities have the potential to impact upon the environment. To achieve the aims stated in the Environmental Policy we require that all suppliers and contractors operate in compliance with the law and are committed to best practice in environmental management.

Product Support and Installation contractors are required to:

1. Ensure that wherever possible waste is removed from the client's site, where arrangements are in place all waste should be returned to Foster Refrigerator's premises. In certain circumstances waste may be disposed of on the client's site; if permission is given, if the client has arrangements in place for the type of waste.
2. If arranging for the disposal of your waste, handle, store and dispose of it in such a way as to prevent its escape into the environment, harm to human health, and to ensure the compliance with the environmental law. Guidance is available from the Environment Agency on how to comply with the waste management 'duty of care'.
3. The following waste must be stored separately from other wastes, as they are hazardous to the environment: refrigerants, polyurethane foam, and oils.
4. When arranging for disposal of waste, ensure a waste transfer note or consignment note is completed as appropriate. Ensure that all waste is correctly described on the waste note and include the appropriate six-digit code from the European Waste Catalogue. Your waste contractor or Foster can provide further information if necessary.
5. Ensure that all waste is removed by a registered waste carrier, a carrier in possession of a waste management licence, or a carrier holding an appropriate exemption. Ensure the person receiving the waste at its ultimate destination is in receipt of a waste management licence or valid exemption.
6. Handle and store refrigerants in such a way as to prevent their emission to atmosphere, and ensure they are disposed of safely and in accordance with environmental law.
7. Make arrangements to ensure all staff who handle refrigerants do so at a level of competence consistent with the City Guilds 2078 Handling Refrigerants qualification or equivalent qualification.
8. Ensure all liquid substances are securely stored to prevent leaks and spills, and are **not** disposed of into storm drains, foul drain, or surface water to soil.

Disposal Requirements

If not disposed of properly all refrigerators have components that can be harmful to the environment. All old refrigerators must be disposed of by appropriately registered and licensed waste contractors, and in accordance with national laws and regulations.

Cabinet Descriptions

All Ranges - The cabinets are manufactured as a one piece foamed shell with the condensing unit located on the base of the cabinet. All the cabinets conform to ISO Climate Class 4 (32°c with 40% RH) and have their temperature controller by a LAE microprocessor controller with digital temperature display.

Undercounter - The doors are fitted with pivot hinges, integral door handle situated at the front centre and magnetic door gasket. All models are fitted with 4mm roller castors to the rear and M8 adjustable levelling bolts at the front.

On the glass door models the interior light is fitted to the top of the storage area at the front. The on/off switch is incorporated into the light.

Prep Tables – The doors are the same as the above undercounter but these units also combine a worktop for food prep with a back section that holds pans for food with a hygienic stainless cover.

Space Savers – Are the same as the undercounter range but as the title describes are made for the kitchen without a lot of space and or tight areas.

HR and LR 120, 200, 240 and 360 models refrigeration systems are integral with an air-cooled condensing unit. The refrigerant is distributed into the evaporator which is controlled by a capillary. All these units have forced air cooling which is where the air is circulated through the evaporator, via the fan/s then into the storage area. The HR150-A also have forced air cooling but instead the air is drawn over the evaporator and then in to the storage area.

The HR150-A refrigeration system is also integral with an air-cooled compressor and static condenser where the refrigerant is distributed into the evaporator controlled by a capillary.

The LR150-A model has static freezer shelves with circulation in the storage compartment by natural convection. This means they also require manual defrosting.

The HR150-A, 200 and LR200 condensate vaporisation is provided by a self-contained condensation vaporiser tray attached to the top of the compressor.

The LR120, 200, 240 and 360 have electric defrost set at 4 times per 24 hours, whereas the HR120, 150-A, 200, 240 and 360 are on a timed off cycle defrost.

Bit25 Controller Introduction by Models

Model	1st Serial Number Issued	Manufacturer Date from
100 (H - Burger King Only Spec)		
120 (H,L & Broadway)	Unknown	November 2011
150-A (H&L)	E5306481 & E5306484	October 2011
200 & 200FT (H&L)	E5307001	October 2011
240 (H&L)	E530587 & E5305856	November 2011
360 & 360FT (H&L)	E5307002	October 2011

Controller Operation

The controller consists of two pieces, the controller & separate display. This two piece controller has the controller/PCB unit fitted at the rear of the cabinet with the display fitted into the front of the cabinet, interconnected by a ribbon cable.

BIT25 Controller PCB (00-556354)

LCD 5S Display (00-555992)

Controller Connection Cable (00-556415)

BIT25 Controller/PCB Cover/Housing (00-556361)

Probe Air T1 (00-556376)

Probe Evap T2 (00-556356)



LCD 5S Display (00-555992)

Indicators and Buttons

Symbol	Reason	Button	Use
	Alarm		Info / Set Point Button
	Thermostat Output		Manual Defrost / Decrease Button
	Fan Output		Increase Button / Manual Activation
	Defrost Output		Exit/ Stand-by Button
	Activation of 2 nd parameter set		

Display

During normal operation the display shows either the temperature measured or one of the following indicators:

Symbol	Reason	Symbol	Reason
	Defrost in progress		Condenser High Pressure Alarm
	Controller in stand-by		Internal High temperature Alarm
	Condenser clean warning		Internal Low Temperature Alarm
	Door open alarm		Probe T1 Failure
	Condenser high temperature alarm		Probe T2 Failure
	Generic Alarm		

Information Menu

The information available in the menu is shown below:

Symbol	Reason	Symbol	Reason
	Instant probe 1 temperature		Minimum probe 1 temperature recorded
	Instant probe 2 temperature *		Compressor working weeks **
	Instant probe 3 temperature *		Keypad state lock
	Maximum probe 1 temperature recorded		

* Displayed only if enabled (see configuration parameters)


** Displayed only if **ACC** > 0

User Functions






Start Sequence

When the unit is first connected to the mains the display will automatically light up and show either **off** or the current ambient temperature.






To start or activate when in standby:

- Press and hold the  button for 5 seconds then release.


Access to the menu and information displayed

- Press and immediately release button 
- With button  or  select the data to be displayed
- Press and hold button  to display the value
- To exit from the menu, press button  or wait for 10 seconds.

Set point: Display and modification

- Press button  and hold to display the set point.
- By keeping button  pressed, use button  or  to set the desired value (adjustment is within the minimum SPL and the maximum SPH limit)
- When button  is released, the new value is stored.

Standby

When pressing the  button for 3 seconds, will allow the controller to be put on a standby or output control to be resumed (with SB = YES only). When on Standby **off** will be displayed.

Keypad Lock

The keypad lock avoids undesired, potentially dangerous operations, which might be attempted when the controller is operating in a public place. In the INFO menu, set parameter **Loc** = YES to inhibit all functions of the button. To resume normal operation of keypad, adjust setting so that **Loc** = NO.

Selection of second parameter group

It is possible to select control parameters between two different pre-programmed groups, in order for the fundamental control parameters to be adapted to changing needs. Changeover from Group I to Group II (and vice versa) may take place Manually by pressing **II°** for 2 seconds (with IISM = MAN), or **Automatically** when IISM=D12 and the **Auxiliary Input D12** is activated (the activation of D12 selects Group II). If IISM = NON, switchover to Group II is inhibited. The activation of Group II is signalled by the lighting up of relevant LED on the controller display.

Defrost

Automatic Defrost – excluding LR150 & LR410

Defrost starts automatically as soon as the time set with parameter DFT has elapsed.

- **Time Defrost** With DFM = TIM defrost takes place at regular intervals when the timer reaches the value DFT. For example, with DFM = TIM and DFT = 06, a defrost will take place every 6 hours.
- **Optimized Defrost** With DFM=FRO the timer is increased only when the condition for frost to form in the evaporator occurs. Once the DFT value is reached, defrost takes place. If the evaporator works at 0°C, defrost frequency depends on the thermal load and climatic conditions. With setpoints much lower than 0°C, defrost frequency mainly depends on the refrigerator operating time.
- **Defrost time count backup** At the power-up, if DFB = YES, the defrost timer resumes the time count from where it was left off before the power interruption. Visa versa with DFB=NO, the time count re-starts from 0. In stand-by the accumulated time count is frozen.

Defrost type

Once defrost has started, compressor and defrost outputs are controlled according to parameter DTY. If FID =YES, the evaporator fans are active during defrost.

Defrost Termination

Time termination – T2=NO the evaporator temperature is not monitored and defrost will last as long as time DTO.


Temperature termination – T2=YES In this case, if the sensor T2 measures the temperature DLI before the time DTO elapses, defrost will be terminated in advance.

Resuming Thermostatic Cycle

When defrost is over, if DRN is greater than 0, all outputs will remain off the DRN minutes, in order for the ice to melt completely and the resulting water to drain. The fans will only re-start when the evaporator temperature is lower than FDD (if T2=YES), or after FTO minutes have elapsed.

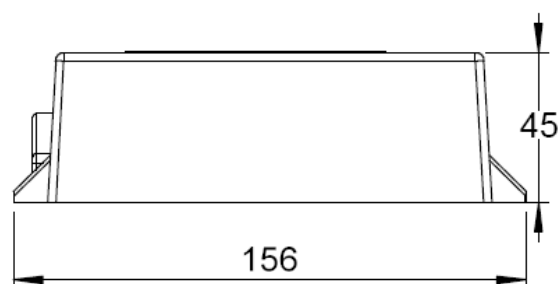
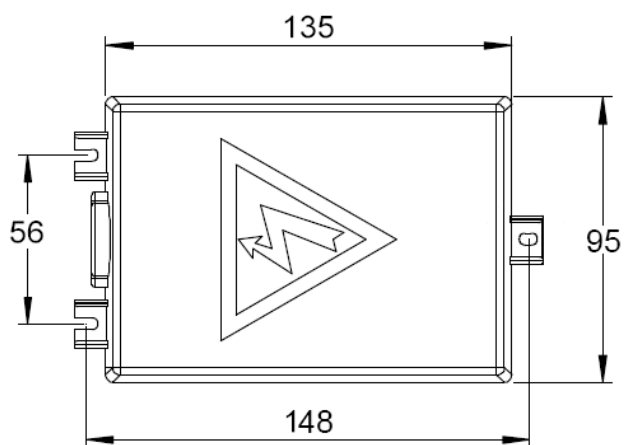
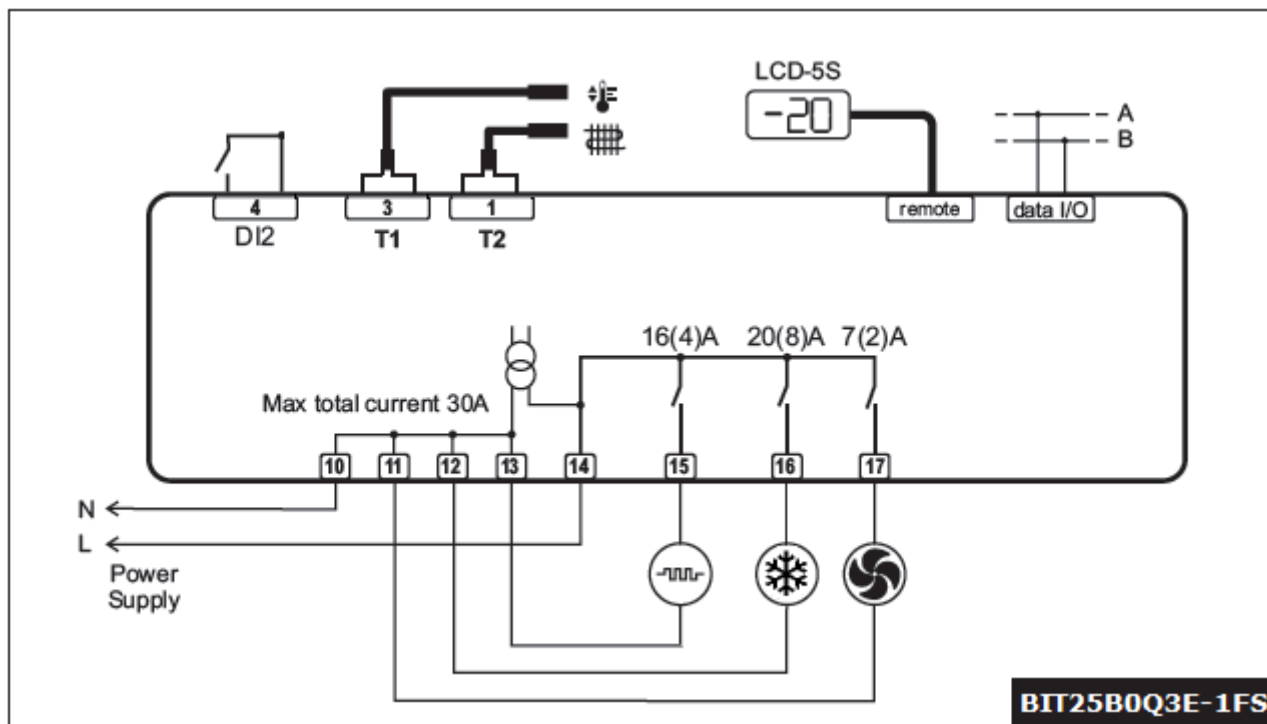
Caution- if DFM=NON all defrost functions are inhibited; if DFT=0, automatic defrost functions are excluded; during a high pressure alarm or a DI1 (DI2) generic alarm, defrost is suspended; during defrost, high temperature alarm is bypassed.

Manual Defrost - 'LR150' and 'LR410' Freezer Shelves

To initiate a manual defrost press and hold the defrost button  for 2 seconds.

All other 'Under-Counter' and 'Space-Saver' models are fitted with a fully automatic defrost system to ensure that the evaporator remains free from ice in normal use. Melt-water is evaporated using the heat from the refrigeration system."

Controller Wiring Diagram, Dimensions & Technical Data



(Dimensions in mm)

Technical Data

Power Supply

BIT-25...E 230Vac \pm 10%, 50/60Hz, 3W

Relay Output

Compressor 20(8)A 240Vac
Auxiliary Loads 1 16(4)A 240Vac
Auxiliary Loads 2 7(2)A 240Vac

Input

NTC 10K Ω @25°C

Measurement Range

--50 / -9.9...19.9 / 110°C

Measurement Accuracy

<0.5°C within the measurement range










Operating Conditions

-10...+50°C; 15%...80%r.H

CE (Reference norms)

EN60730-1; EN60730-2-9
EN55022 (Class B)
EN50082-1

Configuration Parameters

- To get access to the parameter configuration menu, press  +  for 5 seconds
- With button  or  select the parameter to be modified.
- Press button  and hold briefly to display the value. On releasing the button the controller will then show the next parameter.
- By keeping button  pressed, use button  or  to set the desired value. On releasing the button the controller will store the amended value and then show the next parameter.
- To exit from the setup, press button  or wait for 30 seconds.

Default Controller Parameter Settings

Parameter:		Range:	Description:	Default
SPL		-50 ... SPH	Minimum limit for 'SP' setting.	1
SPH		SPL ... 110°	Maximum limit for 'SP' setting.	3
SP		SPL ... SPH	Temperature setpoint to be achieved.	2
C-H		REF - HEA	Refrigeration or Heating control mode.	REF
HYS		1 ... 10°	Off / On thermostat differential.	3
CRT		0 ... 30 min	Compressor rest time.	2
CT1		0 ... 30 min	Thermostat run time with faulty T1 probe.	6
			('CT1' = 0 output with faulty T1 will always be off).	
CT2		0 ... 30 min	Thermostat off time with faulty T1 probe.	4
			('CT2' = '0' & 'CT1' =>'0' output with faulty T1 will always be on).	
CSD		0 ... 30 min	Compressor stop delay after door has been opened.	1
			(Only if 'DS' = 'YES').	
DFM			Defrost start mode:	TIM
		NON	Defrost function is disabled (<i>the following parameter will be 'FCM'</i>).	
		TIM	Regular time defrost.	
		FRO	Defrost time elapses only in condition of frost accumulation.	
DFM = 'TIM' or 'FRO'	DFT	0 ... 99 hours	Time interval between defrosts.	6
	DFB		Defrost timer clock.	YES
		YES	Following mains interruption, timer resumes count.	
		NO	Following mains interruption, timer restarts from zero.	
	DLI	-50 ... 110°	Defrost end temperature	15
			(Only if 'T2' = 'YES').	
	DTO	1 ... 120 min	Maximum defrost duration.	20
	DTY		Defrost type:	OFF
		OFF	Timed off cycle defrost (compressor and heater off).	
		ELE	Electric heater defrost (compressor off, heater on).	
		GAS	Hot gas defrost (compressor and heater on).	
	DPD	0 ... 240 sec	Evaporator pump down. Timed pause at start of defrost.	0
	DRN	0 ... 30 min	Drain down period.	2
	DDM		Defrost display mode:	DEF
		RT	Real (actual) air temperature.	
		LT	Last temperature display before start of defrost.	
		SP	The current setpoint value.	
		DEF	"DEF"	

	DDY	0 ... 60 min	Defrost display delay period. Time 'DDM' is shown following defrost termination.	10
	FID		<i>Fans in defrost:</i>	YES
		YES	Fans run during defrost.	
		NO	Fans do not run during defrost.	
	FDD	-50 ... 110°	Evaporator fan restart temperature following defrost. (Only if 'T2' = 'YES').	5
	FTO	0 ... 120 min	Maximum evaporator fan stop period following defrost (only when 'T2' = 'YES').	3
FCM			<i>Evaporator fan mode during thermostatic control:</i>	NON
		NON	Fan(s) run continuously (subject to door & defrost).	
		TMP	Temperature based control. When compressor is on, fans are on. When compressor is off, fans run as long as temperature difference $T_e - T_a > 'FDT'$. Fans on again with 'FDH'.	
			Time based control. When compressor is on, fans are on. When compressor is off, fans in accordance to parameters FT1', 'FT2' and 'FT3'.	
		TIM	Time based control. When compressor is on, fans are on. When compressor is off, fans in accordance to parameters FT1', 'FT2' and 'FT3'.	
			Time based control. When compressor is on, fans are on. When compressor is off, fans in accordance to parameters FT1', 'FT2' and 'FT3'.	
FDT		-12.0 ... 0°	$T_e - T_a$ difference for fans to turn off after compressor stopped. (Only if 'T2' = 'YES' and 'FCM' = 'TMP').	-1
FDH		1 ... 12.0°	Temperature differential for evaporator fan restart. (Only if 'T2' = 'YES' and 'FCM' = 'TMP').	3
FDS		0 ... 120 sec	Minimum evaporator fan stop period (following door opening etc.).	20
FT1		0 ... 180 sec	Fan stop delay after compressor stop.	15
FT2		0 ... 30 min	Timed fan stop following 'FT1'. (With FT2 = '0' the fans remain on all the time).	0
FT3		0 ... 30 min	Timed fan run following 'FT2'. (With 'FT3' = '0' & 'FT2' > '0' the fans remain off all the time).	2
ATM			<i>Alarm threshold configuration:</i>	REL
		NON	All temperature alarms are inhibited (<i>the following parameter will be 'ADO'</i>).	
		ABS	The value set in 'ALA' & 'AHA' represent actual alarm setpoints.	
		REL	The values set in 'ALR' & 'AHR' are alarm differentials which relate to 'SP' and 'SP' + 'HYS' (<i>the following parameter will be 'ALR'</i>).	
'ATM' = 'ABS'	ALA	-50 ... 120°	Low temperature alarm threshold.	-3
	AHA	-50 ... 120°	High temperature alarm threshold (<i>the following parameter will be 'ATI'</i>).	8
ATM' = 'REL'	ALR	-12 ... 0°	Low temperature alarm differential. (With 'ALR' = '0' the low temperature alarm is excluded).	-5
	AHR	0 ... 12°	High temperature alarm differential. (With 'AHR' = '0' the low temperature alarm is excluded).	5
ATM' = 'ABS' or 'REL'	ATI		<i>Alarm probe:</i>	T1
		T1	Air temperature probe used for alarm detection.	
		T2	Evaporator temperature probe used for alarm detection (if 'T2' = 'YES').	
		T3	Third temperature probe used for alarm detection (if 'DI2' = 'T3').	
	ATD	0 ... 120 min	Delay before alarm temperature warning.	90
ADO		0 ... 30 min	Delay before door open alarm warning (only when 'DI2' = 'DOR').	8

AHM			Operation in case of high condenser alarm (if 'DI2' = 'T3' and 'T3' = 'CND'):	NON	
		NON	High condenser temperature alarm inhibited.		
		ALR	Condenser warning - 'HC' displayed, alarm sounds.		
		STP	As 'ALR', with compressor stopped and defrosts suspended.		
AHT		-50 ... 110°	Condenser alarm temperature (if 'DI2' = 'T3').	65	
ACC		0 ... 52 weeks	Condenser cleaning period.	0	
			(With 'ACC' = '0' condenser cleaning alarm is disabled).		
IISM			Switchover method to second parameter set:	NON	
		NON	Second parameter set is excluded (the following parameter will be 'SB').		
		MAN	Second parameter set is activated / deactivated by button 'M'.		
		DI2	Second parameter set activated by 'DI2' input ('DI2' = 'IISM').		
ATM' = 'ABS' or 'REL'	IISL	-50 ... IISH	Minimum limit for 'IISP' setting.	1	
	IISH	IISL ... 110°	Maximum limit for 'IISP' setting.	1	
	IISP	IISP ... IISH	Temperature setpoint to be achieved in 'Mode 2'.	1	
	IIHY	1 ... 10°	Off / On thermostat differential in 'Mode 2'.	3	
	IIFC		Evaporator fan mode during 'Mode 2' thermostatic control:	NON	
		NON	Fan(s) run continuously.		
		TMP	Temperature based control. When compressor is on, fans are on. When compressor is off, fans run as long as temperature difference $T_e - T_a > 'FDT'$. Fans on again with 'FDH'.		
			TIM		Time based control. When compressor is on, fans are on.
					When compressor is off, fans in accordance to parameters FT1', 'FT2' and 'FT3'.
	IIDF	0 ... 99 hours	Time interval between defrosts in 'Mode 2'.	6	
SB			Standby button operation:	YES	
		YES	Standby button enabled.		
		NO	Standby button disabled.		
DI1			Configurable digital input operation:	NON	
		NON	Digital input not activated.		
		DOR	Door switch input.		
		ALO	Alarm ('ALr' displayed) when contact opens.		
		ALC	Alarm ('ALr' displayed) when contact closes.		
DI2			Configurable digital input operation:	NON	
		NON	Digital input not activated.		
		DOR	Door switch input.		
		ALO	Alarm ('ALr' displayed) when contact opens.		
		ALC	Alarm ('ALr' displayed) when contact closes.		
		PSP	Allows control via potentiometer.		
		IISM	Operates 2 nd parameter set when contact closes.		
		T3	Allows for 3 rd temperature probe function.		
DI2' = 'T3'	T3		T3 probe function (only when 'DI2' = 'T3'):	DSP	
		DSP	T3 probe temperature displayed.		
		CND	Condenser temperature measurement.		
	OS3	-12.5 ... 12.5°C	T3 probe temperature offset (only when 'DI2' = 'T3'):	0	

DI2' = 'PSP'	PSL	-50 ... 70°C	Minimum setpoint adjusted by potentiometer (only when 'DI2' = 'PSP'):	10
	PSR	0.0 ... 15.0°C	Range of setpoint (hysteresis) for potentiometer (only when 'DI2' = 'PSP'):	10
	POF		Potentiometer standby enabling operation (only when 'DI2' = 'PSP'):	YES
		YES	Potentiometer standby enabled (when turned to minimum, controller set to standby).	
		NO	Potentiometer standby disabled.	
	LSM		Light control mode (if 'OA1' = 'LGT'):	MAN
		NON	Light Control Mode disabled (always off).	
		MAN	Light output operation is activated / deactivated by button 'M'.	
		D1O	Light output is switched on when door is opened (if 'DI1' = 'DOR').	
		D2O	Light output is switched on when door is opened (if 'DI2' = 'DOR').	
		D2C	Light output is switched off when door is opened (if 'DI2' = 'DOR').	
OA1			Auxiliary Relay 1 Operation:	NON
		NON	Output disabled (always off).	
		FAN	Control of evaporator fan.	
		DEF	Control of defrost heater / device (activated when 'DTY' = 'ELE' or 'GAS').	
		LGT	Output enabled for light control.	
		0-1	Contacts open/close with 'Standby'/'On' mode ('SB' = 'YES').	
		ALO	Contacts open when an alarm condition occurs.	
		ALC	Contacts close when an alarm condition occurs.	
			(Relay contacts open when in standby mode).	
OA2			Auxiliary Relay 2 Operation:	FAN
		NON	Output disabled (always off).	
		FAN	Control of evaporator fan.	
		DEF	Control of defrost heater / device (activated when 'DTY' = 'ELE' or 'GAS').	
		LGT	Output enabled for light control.	
		0-1	Contacts open/close with 'Standby'/'On' mode ('SB' = 'YES').	
		ALO	Contacts open when an alarm condition occurs.	
		ALC	Contacts close when an alarm condition occurs.	
			(Relay contacts open when in standby mode).	
OS1		-12.5 ... 12.5°C	Air temperature probe (T1) offset.	0
T2			T2 probe enabling:	NO
		YES	T2 probe enabled.	
		NO	T2 probe disabled.	
OS2		-12.5 ... 12.5°C	Evaporator temperature probe (T2) offset.	0
TLD		1 ... 30 min	Delay for min. ('TLO') and max. ('THI') temperature logging.	10
SCL			Readout scale:	2°C
		1°C	Range -50 110°C (0.1°C resolution within -9.9 to +19.9°C)	
		2°C	Range -50 110°C	
		°F	Range -58 180°F	
SIM		0 ... 100	Display slowdown.	5
ADR		1...255	BIT25 address for PC communication	1

Individual Model Parameter Settings

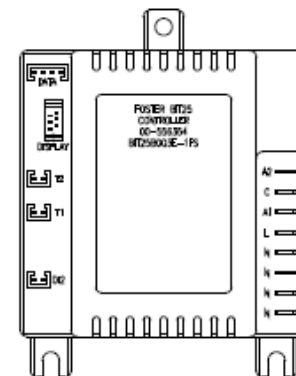
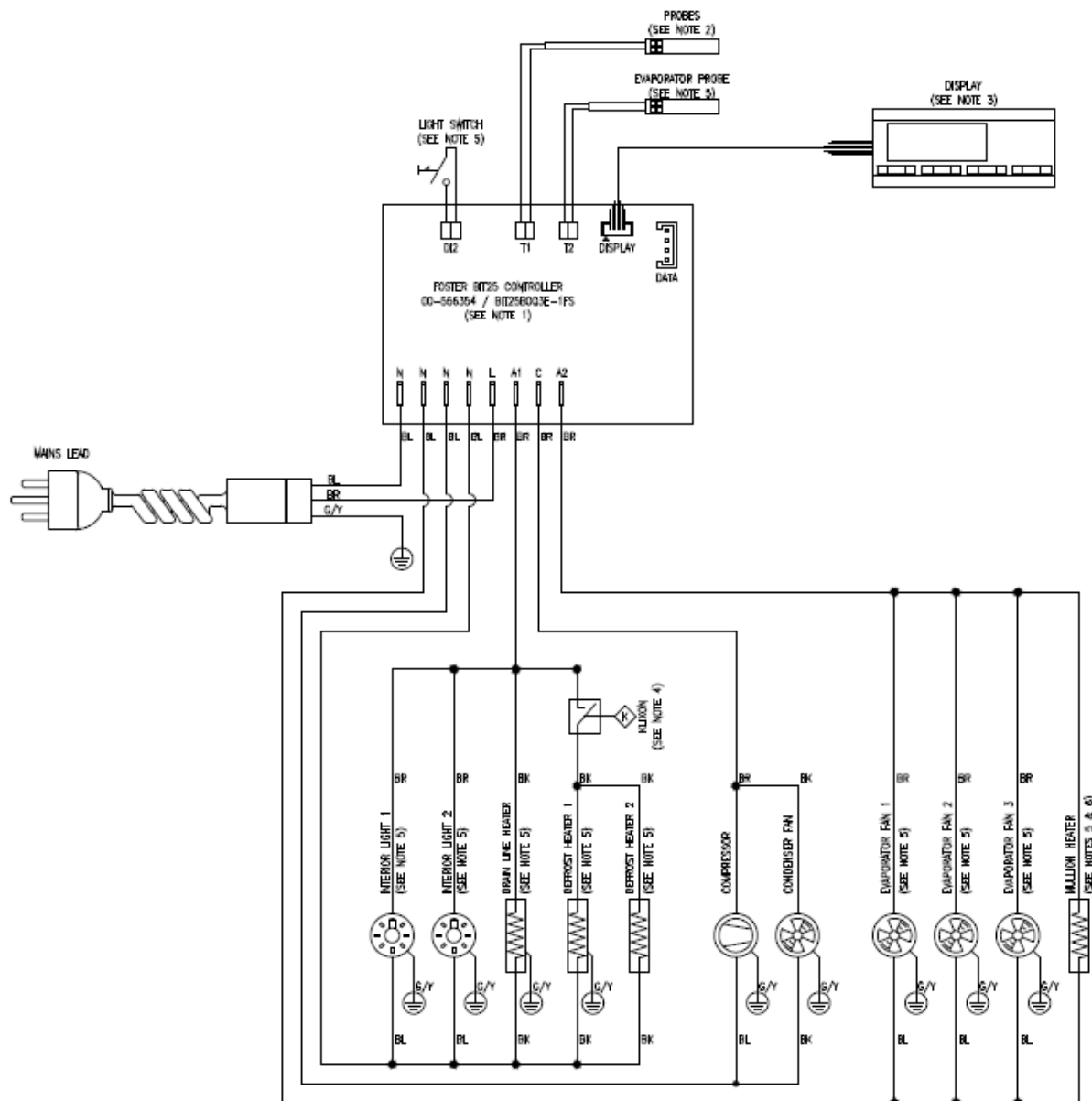
[illegible]

FCM	Evaporator fan mode during thermostatic control.	NON	NON	NON	NON	NON	NON	NON	NON	NON
FDT	Te-Ta difference for fans to turn off after compressor stopped.	-1	-1	-1	-1	-1	-1	-1	-1	-1
FDH	Temperature differential for evaporator fan restart.	3	3	3	3	3	3	3	3	3
FDS	Minimum evaporator fan stop period (following door opening etc.).	20	20	20	20	20	20	20	20	20
FT1	Fan stop delay after compressor stop.	15	15	15	15	15	15	15	15	15
FT2	Timed fan stop following 'FT1'.	0	0	0	0	0	0	0	0	0
FT3	Timed fan run following 'FT2'.	2	2	2	2	2	2	2	2	2
ATM	Alarm threshold configuration.	REL	REL	REL	REL	REL	REL	REL	REL	REL
ALA	Low temperature alarm threshold.	-3	-3	-3	-3	-3	-3	-3	-3	-3
AHA	High temperature alarm threshold (the following parameter will be 'ATI').	8	8	8	8	8	8	8	8	8
ALR	Low temperature alarm differential.	-5	-5	-5	-5	-5	-5	-5	-5	-5
AHR	High temperature alarm differential.	5	5	5	5	5	5	5	5	5
ATI	Alarm probe.	T1	T1	T1	T1	T1	T1	T1	T1	T1
ATD	Delay before alarm temperature warning.	90	90	90	90	90	90	90	90	90
ADO	Delay before door open alarm warning (only when 'DI2' = 'DOR').	8	8	8	8	8	8	8	8	8
AHM	Operation in case of high condenser alarm (if 'DI2' = 'T3' and 'T3' = 'CND'):	NON	NON	NON	NON	NON	NON	NON	NON	NON
AHT	Condenser alarm temperature (if 'DI2' = 'T3').	65	65	65	65	65	65	65	65	65
ACC	Condenser cleaning period.	0	0	0	0	0	0	0	0	0
IISM	Switchover method to second parameter set.	NON	NON	NON	NON	NON	NON	NON	NON	NON
IISL	Minimum limit for 'IISP' setting.	1	1	1	1	1	1	1	1	1
IISH	Maximum limit for 'IISP' setting.	1	1	1	1	1	1	1	1	1
IISP	Temperature setpoint to be achieved in 'Mode 2'.	1	1	1	1	1	1	1	1	1
IIHY	Off / On thermostat differential in 'Mode 2'.	3	3	3	3	3	3	3	3	3
IIFC	Evaporator fan mode during 'Mode 2' thermostatic control.	NON	NON	NON	NON	NON	NON	NON	NON	NON
IIDF	Time interval between defrosts in 'Mode 2'.	6	6	6	6	6	6	6	6	6
SB	Standby button operation.	YES	YES	YES	YES	YES	YES	YES	YES	YES
DI1	Configurable digital input 1 operation.	NON	NON	NON	NON	NON	NON	NON	NON	NON
DI2	Configurable digital input 2 operation.	NON	NON	DOR	NON	NON	DOR	NON	NON	NON
T3	T3 probe function (only when 'DI2' = 'T3').	DSP	DSP	DSP	DSP	DSP	DSP	DSP	DSP	DSP
OS3	T3 probe temperature offset (only when 'DI2' = 'T3').	0	0	0	0	0	0	0	0	0
PSL	Minimum setpoint adjusted by potentiometer (only when 'DI2' = 'PSP').	2	2	2	2	2	2	2	2	2
PSR	Range of setpoint (hysteresis) for potentiometer (only when 'DI2' = 'PSP').	10	10	10	10	10	10	10	10	10

POF	Potentiometer standby enabling operation (only when 'DI2' = 'PSP').	YES	YES	YES	YES	YES	YES	YES	YES	YES
LSM	Light control mode (if 'OA1' = 'LGT').	NON	NON	D2C	NON	NON	D2C	NON	NON	NON
OA1	Auxiliary Relay 1 Operation.	NON	NON	LGT	NON	NON	LGT	NON	DEF	DEF
OA2	Auxiliary Relay 2 Operation.	FAN	FAN	FAN	FAN	FAN	FAN	FAN	FAN	FAN
OS1	Air temperature probe (T1) offset.	0	0	0	0	0	0	0	0	0
T2	T2 probe enabling.	NO	NO	NO	NO	NO	NO	NO	YES	YES
OS2	Evaporator temperature probe (T2) offset.	0	0	0	0	0	0	0	0	0
TLD	Delay for min. ('TLO') and max. ('THI') temperature logging.	10	10	10	10	10	10	10	10	10
SCL	Readout scale.	2°C	2°C	2°C	2°C	2°C	2°C	2°C	2°C	2°C
SIM	Display slowdown.	5	5	5	5	5	5	5	5	5
ADR	BIT25 address for PC communication.	1	1	1	1	1	1	1	1	1

Yellow values highlight a difference from the controllers default setting.

Wiring Diagram – All models (including with light option)



NOTES:

1. CONTROLLER PARAMETERS CONFIGURED SPECIFIC TO MODEL.
2. AIR PROBE (T1) & EVAPORATOR PROBE (T2) 2WTC TYPE (S2K2....).
3. CONTROLLER DISPLAY TYPE LCD 55 (00-555992).
4. DEFROST HEATER KILOHM NORMALLY CLOSED TYPE - OPENS 20°C / RESETS 15°C.
5. MODEL SPECIFIC WIRING CONFIGURATION.

MODEL RANGE	EVAPORATOR PROBE	DEFROST HEATER 1	DEFROST HEATER 2	DRAIN LINE HEATER	MULLEN HEATER	EVAPORATOR FAN 1	EVAPORATOR FAN 2	EVAPORATOR FAN 3	INTERIOR LIGHT 1	INTERIOR LIGHT 2
HR120										
HR120										
HR140										
HR140 WITH INTERIOR LIGHT										
HR150										
HR150 WITH INTERIOR LIGHT										
HR200										
HR200 WITH INTERIOR LIGHT										
HR200FT										
HR240										
HR240 WITH INTERIOR LIGHT										
HR360										
HR360 WITH INTERIOR LIGHT										
HR360FT										
HR410										
HR410 WITH INTERIOR LIGHT										
LC125										
LR120										
LR120										
LR140										
LR150										
LR200										
LR240										
LR360										
LR410										

6. MULLEN HEATER CABLE COLOUR DEPENDENT UPON MODEL.
7. ALL CABLE 1.0mm² UNLESS OTHERWISE STATED.
8. CABLE COLOUR CODE:
BR - BROWN RD - RED GR - GREY
BL - BLUE BK - BLACK YW - YELLOW
G/Y - GREEN / YELLOW WH - WHITE OR - ORANGE
(ALL EARTH WIRING TO BE GREEN/YELLOW)
9. CIRCUIT SHOWN DE-ENERGISED.










CUSTOMER COPY















FOSTER REFRIGERATOR (U.K) LTD
OLDMEADOW ROAD KING'S LYNN NORFOLK PE30 4JU

REV	DESCRIPTION	DATE
02	LC125 MODEL 4000	NAD 16/05/11
01	WIRING DIAGRAM	01-271972-00-01
01	UNDERCOUNTER MODEL RANGE	SHEET 1 OF 1
01	INTEGRAL MODELS	DATE 16/05/11

Troubleshooting

Problem	Possible Cause	Solution
Compressor will not start	No voltage in socket	Use voltmeter to check
	Electrical conductor or wires may be cut	Use ohmmeter to check for continuity
	Defective electrical component: thermostat, relay, thermal protector etc.	Replace defective component
	Compressor motor has a winding open or shorted	Measure ohmic resistance of main and auxiliary winding using ohmmeter. Compare with correct values
	Compressor stuck	Change compressor
	Temperature control contacts are open	Repair or replace the contacts
	Incorrect wiring	Check wiring diagram and correct
	Fuse blown or circuit breaker tripped.	Replace fuse or reset circuit breaker
	Power cord unplugged	Plug in power cord.
	Controller set too high	Set controller to lower temperature.
	Cabinet in defrost cycle	Wait for defrost cycle to finish
The temperature is too cold	Controller is set at a very cold position	Set to warmer position and check if the compressor stops according to controllers operating range.
	Controller does not disconnect the condensing unit	Check the insulation of the thermostat. If problem persists, change the thermostat
	Control contacts are stuck closed	Change the control. Check amperage load
	Defective or incorrect temperature control	Determine correct control and replace.
The temperature is not cold enough	Controller is set at a very warm position	Adjust to colder setting
	Condenser is dirty	Clean condenser
	The refrigerator has been placed at an inadequate location	The unit must not be near stoves, walls that are exposed to the sun, or places that lack sufficient air flow.
	Compressor is inefficient or there is a high pressure due to the air in the system	If there is air in the system, purge and recharge
 	Iced up evaporator coil	Check temperature control, refrigerant charge, and defrost mechanism. Remove all ice manually and start over.
	Restriction in system	Locate exact point of restriction and correct
	The refrigerator has been used improperly	The shelves must never be covered with any type of plastic or other material that will block the circulation of cold air within the refrigerator.
	Too many door openings	Advise user to decrease if possible

		Excessive heat load placed in cabinet	Advise user not to put in products that are too hot.
		The refrigerator has been overcharged with the refrigerant gas	Check to see if condensation or ice crystals have formed on the suction line. If so, charge with the correct amount of gas.
		The refrigerant gas is leaking	Find the location of gas leak in order to seal and replace the defective component. Change the drier. Perform a good vacuum and recharge unit.
	 	The evaporator and/or condenser fans are not working	Check electrical connections and make sure that the fan blade isn't stuck. Replace the fan motor if it doesn't work.
		Blocking air flow	Re-arrange product to allow for proper air flow. Make sure there is at least four inches of clearance from evaporator.
		Fuse blown or circuit breaker tripped	Replace fuse or reset circuit breaker.
Electrical Shocks		Wires or electrical components are in direct contact with metallic parts.	Check for appropriate insulation on the connections of each component.
Noise		The refrigerator is not properly levelled	Check if the noise goes away after you level the refrigerator
		The condenser is not fastened correctly. Copper tubing is in contact with metal	While the compressor is working, check to see if metal parts are in contact with one another and/or if the screws that fasten the condenser are tightened.
		The evaporator and/or condenser fans are loose	Check if the fans are securely fastened. Also, check if the fan blades are loose, broken or crooked. If so, change the faulty blade.
		Compressor has an internal noise	If the noise persists after all other measures have been taken, it may be originating from the compressor.
		Loose part(s)	Locate and tighten loose part(s)
Extreme condensation inside the refrigerator		Controller is set at a very cold position	Set the controller to a warmer position & check to see if compressor stops as should.
		The outside environment's relative humidity is very high (over 75%)	This type of occurrence is caused by local climatic conditions and not by the refrigeration unit.
		The refrigerator door won't shut completely	Check the door and/or the magnetic gasket. Adjust the door hinges if needed; replace the gasket if broken.
		The refrigerator had been placed at an inadequate location	The unit must not be near sources that produce too much heat.
No illumination (Glass door models only)		The light switch is "off" position	Press the light switch to "on" position
		False contact on the light switch, the fluorescent tube, or the ballast	Inspect all connections
		Light switch, ballast and/or fluorescent tube are damaged	Replace the damaged component.

Condensing unit runs for long periods of time		Excessive amount of warm product placed in cabinet	Advise user to leave adequate time for products to cool down
		Prolonged door opening or door ajar	Advise user to ensure doors are closed when not in use and to avoid opening doors for long periods of time.
		Door gasket(s) not sealing properly	Ensure gaskets are snapped in completely. Remove gasket and wash with soap and water. Check condition of gasket & replace if necessary
		Dirty condenser coil	Clean condenser coil
		Evaporator coil iced over	Unplug unit and allow coil to defrost. Make sure thermostat is not set too cold. Ensure that door gasket(s) are sealing properly. Select manual defrost and ensure system works.

Notes



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